TECHNICAL SUPPORT SECTION EFFICACY REVIEW - I

Disinfectants Branch

IN 04-11-86 OUT 07-15-86

Dennis G. Guse DEC 7/16/86

Reviewed By Dennis G. Guse Date 07-15-86

EPA Reg. No. or File Symbol 9402-3

EPA Petition or EUP No. None

Date Division Received 04-08-86

Type Product Impregnated Virucidal Facial Tissue

Data Accession No(s). 262246

Product Manager 32 (Kempter)

Product Name Kleenex Avert Virucidal Tissue

Company Name Kimberly-Clark Corporation

Submission Purpose Amendment to drastically reduce amount of active ingredients with efficacy data and labels

Type Formulation Dry impregnated tissue

Active Ingredient(s):

	%		
	Accepted	Proposed	Diff.
Citric acid	10.0	3.2	-6.8
Malic acid	5.0	1.6	-3.4
Sodium lauryl sulfate	2.0	0.5	-1.5
Total	17.0	5.3	-11.7

200.0 Introduction

200.1 Uses

Refer to the label accepted w/comments with the EPA Registration Notice dated 12-16-83 and the finished label received 01-16-84, and the additional labeling accepted w/comments with the EPA letter dated 08-07-84.

200.2 Background

Refer to the previous reviews for this product by TSS (Efficacy), DB, RD, dated 01-08-85, 06-22-84, 04-25-84, 12-01-83, 05-02-83, and 12-02-82, and memorandum by TSS (Efficacy), DB, RD, dated 11-10-83.

200.3 Current Submission

Proposed Active Ingredients:		Accepted Active Ingredients:	
Citric acid	3.2	Citric acid	10.0
Malic acid	1.6	Malic acid	5.0
Sodium lauryl sulfate	0.5	Sodium lauryl sulfate	2.0

Submitted Virucidal Data: (New Formula)	Accepted Virucidal Data: (Old Formula)
Rhinovirus Types 1A, 10, 13, 15, 16, 19, and 22	Rhinovirus Types 1A and 14
Parainfluenza virus Types 1 and 3	Parainfluenza virus Types 1 and 3
Respiratory syncytial virus	Respiratory syncytial virus
Influenza virus Types A/Aichi and B/Maryland	Influenza virus Type B/Maryland
Reovirus Type 3	
Adenovirus Type 5	
Herpes simplex virus Types 1 and 2	

The submission includes revised labels.

201.0 Data Summary

201.1 Brief Description of Tests

"Kimberly-Clark's Virucidal Tissue In-Vitro Studies", including a summary, protocol, and data groups 1-16. Report by Cheryl R. Miller and Jeffrey D. Holz, Kimberly-Clark Virology Laboratory, Dept. of Consumer Tissue Sciences and Technology, U. S. Consumer Products Co., Neenah, WI 54956, dated 03-31-86.

201.2 Test Summaries

a. Method: 0.1 ml of undiluted virus suspension was added to a 1-1/8-inch diameter disc of treated tissue (see Appendix A) in a 60-mm plastic petri dish. The addition of virus was made in a manner which permitted the suspension to be absorbed into the disc, completely wetting it, but without overflowing. After the specified exposure time at room temperature (22°C), 5.0 ml of neutralizing solution (KC-NS-11) was added to the dish and mixed gently with the disc for 3 seconds using a pipette tip. Then the entire contents of the dish, including the disc, were rapidly transferred to a wide-mouth tube and vigorously agitated on a vortex mixture for 30 seconds. Serial 10-fold dilutions were then made and the virus was assayed by conventional cell culture methods. The following controls were also performed: (1) Untreated control disc (cut from Man-Size Kleenex facial tissue) + virus + neutralizer (virus control); (2) Virucide-treated disc + neutralizer + virus (neutralizer control); (3) Untreated control disc + neutralizer + virus (neutralizer toxicity control); (4) Virucide-treated disc + neutralizer (cytotoxicity control); and (5) Untreated control disc + neutralizer (cytotoxicity control).

b. Samples: Four batches of virucide-treated tissue (see Appendix A), 1384-83-1, 1384-83-2, 1384-122-1, and 1384-122-2, and untreated control tissue (Man-Size Kleenex facial tissue).

c. Dilution: Undiluted on 1-1/8-inch disc + 0.1 ml virus suspension.

d. Exposure: 1 and 10 minutes at room temperature (22°C).

e. Neutralizer: KC-NS-11 solution consisting of 5.0 ml bovine serum albumin fraction 5 (7.5%), 0.125 ml HEPES buffer (1.0 M), and 0.5 ml sodium hydroxide solution (0.1 N). Dilutions were made in Hanks balanced salt solution.

f. Test Viruses: Parainfluenza virus Types 1 and 3, Influenza virus Types A/Aichi/2/68 and B/Maryland, Reovirus Type 3 (Dearing), Adenovirus Type 5, Herpes simplex virus Types 1 and 2, Respiratory syncytial virus, and Rhinovirus Types 1A, 10, 13, 15, 16, 19, and 22.

g. Host Cells & Assay System: For assay, 0.1 ml of each dilution was inoculated into each of 4 cell cultures containing Vero cells (Herpes simplex Types 1 and 2), Hep-2 cells (Adenovirus Type 5 and Respiratory syncytial virus), HeLa cells (Rhinovirus Types 1A, 10, 13, 15, 16, 19, and 22, and Parainfluenza virus Type 3), and MK-Rhesus cells (Parainfluenza Type 1, Influenza virus Types A and B, and Reovirus). Cells were observed for cytopathogenic effect (CPE) or evaluated for hemadsorption (HA).

h. Results: See next page.

Test Virus	Test Batch	Exposure (Min.)	ID-50 or LD-50 Virus Control (-Log 10)[1]	Virus + Germicide (-Log 10)	Toxicity (-Log 10)	Reduction (Logs)
Rhinovirus Type 1A	122-1	1	4.2	1.2 *	1.2 *	3.0
	122-2	1	4.2	1.2	1.2	3.0
Rhinovirus Type 10	122-1	1	4.2	1.2	1.2	3.0
	122-2	1	4.2	1.2	1.2	3.0
Rhinovirus Type 13	122-1	1	5.0	1.2	1.2	3.8
	122-2	1	5.0	1.2	1.2	3.8
Rhinovirus Type 15	122-1	1	5.2	1.2	1.2	4.0
	122-2	1	5.2	1.2	1.2	4.0
Rhinovirus Type 16	83-1	1	4.4	1.2	1.2	3.2
	83-2	1	4.4	1.2	1.2	3.2
Rhinovirus Type 19	122-1	1	4.2	1.2	1.2	3.0
	122-2	1	4.2	1.2	1.2	3.0
Rhinovirus Type 22	122-1	1	4.7	1.2	1.2	3.5
	122-2	1	4.7	1.2	1.2	3.5
Parainfluenza Type 1	122-1	1	4.4	1.2	1.2	3.2
	122-2	1	4.4	1.2	1.2	3.2
Parainfluenza Type 3	83-1	1	5.7	1.2	1.2	4.5
	83-2	1	5.7	1.2	1.2	4.5
Resp. Syn. Virus	122-1	1	4.2	1.2	1.2	3.0
	122-2	1	4.2	1.2	1.2	3.0
Influenza Type A	122-1	1	5.4	1.2	1.2	4.2
	122-2	1	5.4	1.2	1.2	4.2
Influenza Type B	83-1	1	5.2	1.2	1.2	4.0
	83-2	1	5.2	1.2	1.2	4.0
Reovirus Type 3	122-1	10	4.7	1.2	1.2	3.5
	122-2	10	4.7	1.2	1.2	3.5
Adenovirus Type 5	83-1	10	4.7	1.2	1.2	3.5
	83-2	10	4.7	1.2	1.2	3.5
Herpesvirus Type 1	122-1	1	5.0	1.2	1.2	3.8
	122-2	1	5.0	1.2	1.2	3.8
Herpesvirus Type 2	122-1	1	4.4	1.2	1.2	3.2
	122-2	1	4.4	1.2	1.2	3.2

[1] Untreated tissue + neutralizer + virus used as virus control.

* Lowest dilution detectable; no virus or cytotoxicity detected at this level.

i. Conclusions: Product meets performance standard as a virucide against Rhinovirus Types 1A, 10, 13, 15, 16, 19, and 22, Parainfluenza virus Types 1 and 3, Respiratory syncytial virus, Influenza virus Types A/Aichi and B/Maryland, and Herpes simplex virus Types 1 and 2 at a contact time of 1 minutes, and against Reovirus Type 3 and Adenovirus Type 5 at a contact time of 10 minutes.

Claimed confidential by submitter

TECHNICAL SUPPORT SECTION EFFICACY REVIEW - II

Disinfectants Branch

EPA Reg. No. or File Symbol 9402-3

Date Division Received 04-08-86

Data Accession No(s). 262246

Product Manager No. 32 (Kempter)

Product Name Kleenex Avert Virucidal Tissue

Company Name Kimberly-Clark Corporation

202.0 Recommendations

202.1 Efficacy Supported by the Data

The submitted data support effectiveness of the new formulation for this product as virucidal against the respiratory viruses Rhinovirus Types 1A, 10, 13, 15, 16, 19, and 22, Parainfluenza virus Types 1 and 3, Respiratory syncytial virus, and Influenza virus Types A/Aichi and B/Maryland at a contact time of 1 minute, and Reovirus Type 3 and Adenovirus Type 5 at a contact time of 10 minutes; also against the non-respiratory viruses Herpes simplex Types 1 and 2 at a contact time of 1 minute.

202.2 Efficacy Not Supported by the Data

The submitted data do not support an unqualified and non-specific claim against Rhinoviruses.

202.3 Additional Data Required to Support Efficacy Claims

The type of data which would be required to support an unqualified and non-specific claim against Rhinoviruses is as follows:

Documentation from the literature must be provided as to the most acid resistant types of identified Rhinoviruses. Based on this information, the product must be tested only against the most acid resistant of the identified types. If the product were demonstrated as an effective virucide against the most acid resistant types of Rhinovirus, we could then accept an unqualified and non-specific claim for the product against all Rhinoviruses.

203.0 Labeling

a. In lieu of the additional required data, the claim for Rhinoviruses must qualified by naming the specific types actually tested.

b. Herpes simplex virus Types 1 and 2 are not considered to be causative of upper respiratory tract infections, colds, or flu. Therefore, claims against these viruses must be deleted or characterized and listed separately from the respiratory viruses claimed.

The labeling cannot be accepted until the above requirements are met.